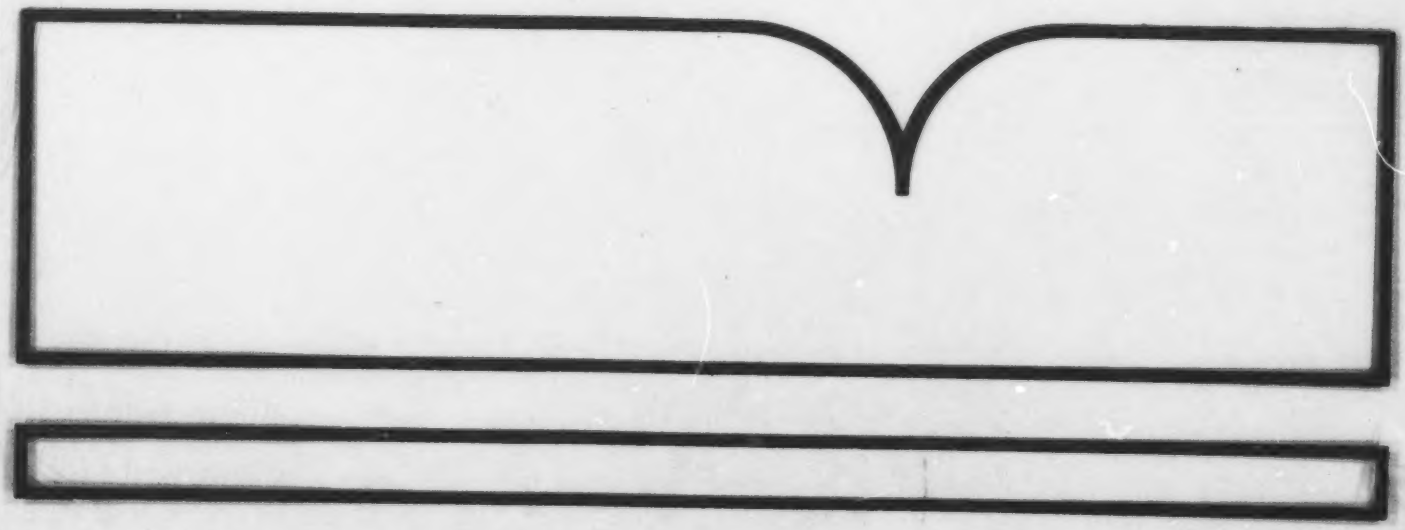
PB85-213593

Superfund Record of Decision (EPA Region 1)
Charles George Site, Tyngsboro, Massachusetts
December 1983

(U.S.) Environmental Protection Agency
Washington, DC

29 Dec 83



U.S. Department of Commerce
National Technical Information Service

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R01-83/001
December 1983

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EPA

Superfund Record of Decision:

Charles George Site, MA

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15. SUPPLEMENTARY NOTES

16. ABSTRACT

The Charles George Land Reclamation Trust Landfill is a privately owned municipal and industrial waste landfill, operating since 1967. The landfill accepted and disposed of chemical waste between 1973 and 1975 under a hazardous waste disposal permit from the Massachusetts DEQE. Leachate from the landfill has contaminated nearby residential bedrock wells which were shutdown July 31, 1982 by order of the Massachusetts DEQE. In April 1983, the Charles George Land Reclamation Trust filed for the protection of the bankruptcy court. This is a National Priorities List site.

The selected remedial action is to extend an existing water supply system to the Cannongate Condominium and local private well users whose wells have been found to be contaminated with volatile organic chemicals from the Charles George site. An RI/FS is being conducted to identify and evaluate remedial alternatives to mitigate threats to public health, welfare and the environment. Determination of future remedial actions will be made upon completion of this work.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Record of Decision Site Name: Charles George Site, MA Contaminated media: gw, Key Contaminants: volatile organics (MEK, acetone, toluene, benzene, MIBK, TCE)		

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Record of Decision
Remedial Action Selection

DEC 29 1983

Site: Charles George Land Reclamation Trust Landfill
Tyngsboro, Massachusetts

Analysis Reviewed:

I have reviewed the following documents describing the analysis of cost-effective remedial actions developed for the Charles George Land Reclamation Trust Landfill site:

-Focused Feasibility Study for Water Supply Alternatives, Cannongate Area, Tyngsboro, Massachusetts Part 1, NUS, October 1983; Part 2, Fay, Spofford & Thorndike, Inc., September 1983

-Staff summary and additional information submitted by the public in response to several public meetings.

Description of Selected Option:

-Extend an existing water supply system to the Cannongate Condominium and local private well users whose wells have been found to be contaminated with volatile organic chemicals from the Charles George site.

Declarations:

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the National Contingency Plan, I have determined that the provision of permanent water supply via connection to a local municipal water supply system is cost-effective and that it effectively mitigates and minimizes damage to, and provides adequate protection of public health, welfare and the environment. I have also determined that the action being taken is appropriate when balanced against the need to use Trust Fund money at other sites.

A Remedial Investigation and Feasibility Study is being conducted to identify and evaluate remedial alternatives to mitigate threats to public health, welfare and the environment at or near the site. A cost effective determination for future remedial action(s) will be made upon completion of this work.

Lee M. Thomas, Assistant
Administrator
Office of Solid Waste and
Emergency Response

CHARLES GEORGE LAND RECLAMATION TRUST LANDFILL

REMEDIAL ACTION BRIEFING DOCUMENT

- The Charles George Land Reclamation Trust Landfill is a privately owned municipal and industrial waste landfill, operated by Mr. Charles George since 1967. The landfill accepted and disposed of chemical waste between 1973 and 1975 under a hazardous waste disposal permit from the Massachusetts DEQE. Leachate from the landfill has contaminated nearby residential bedrock wells which were ordered to be shutdown by Massachusetts DEQE by July 31, 1982. In April 1983, the Charles George Land Reclamation Trust filed for the protection of the backruptcy court.

- The site is on the National Priorities List and was first placed on the interim priority list of 115 priority waste sites proposed for CERCLA funding in October 1981.

- The Commonwealth of Massachusetts has requested that EPA assume the lead for the permanent water supply remedial action at this Site and is willing to enter into a Superfund State Contract.

- In June 1983, NUS and Fay, Spofford, and Thorndike were commissioned to carry out Part I and Part II respectively of a Focused Feasibility Study for Water Supply Alternatives for the Cannongate Area of Tyngsboro. Throughout the summer of 1983, bi-weekly meetings were held with local water commissioners and the public to discuss the various permanent water supply options. In the fall of 1983, a series of public meetings were held to present the findings of the feasibility study and to receive comments on the proposed remedial alternatives. The meetings were well attended and proceedings were tape recorded for future consideration. Comments were also submitted to the Agency in writing.

- The Army Corps of Engineers was issued Phase I design IAG to allow for advance selection of the design A/E. The design will commence immediately following the signature of the ROD and will be completed about three months later. Construction will commence as soon as weather allows.

- In September 1983, emergency funds to a ceiling of $750,000 were authorized for immediate removal activities at the site. The activities include establishing an emergency drinking water supply, covering exposed refuse and wastes at the landfill, and construction of a fence around the landfill.

- In September 1983, incremental funding of $650,000 was authorized for a Remedial Investigation and Feasibility Study (RI/FS) of the site.

Remedial Implementation
Alternative Selection
Charles George Land Reclamation Trust Landfill Site
Tyngsboro, Massachusetts

Background

The Cannongate Condominiums' wells are located within 1000 feet of the Charles George Land Reclamation Trust Landfill. In July 1982, the Massachusetts DEQE closed the condominiums' wells as a result of increasing organic chemical contamination from the landfill leachate. The contaminants found in the condominiums' wells, several of which are potential carcinogens, include MEK, acetone, toluene, benzene, MIBK, TCE, and 1,1-dichloroethane. Sampling and analysis has shown that the contaminants are increasing in magnitude and quantity. Neighboring private wells are beginning to show the presence of contaminants not seen a year ago. Sampling of private bedrock wells in the vicinity of the condominiums carried out in July 1983 revealed that three private wells contain trace amounts of volatile organics and a fourth well has elevated levels of MEK.

Upon closing the condominiums' wells, the Town of North Chelmsford, MA agreed to sell water to the condominium complex. The State also constructed an emergency water supply pipeline to the condominium complex. The pipeline froze in December of 1982, and the residents of the condominium were left without a water supply. Water was trucked to the condominium, but the water service was not dependable and residents of the complex found water unavailable for days during the winter. Also, snow plows struck and ruptured the pipeline during the winter. The condominium residents expended $25,000 in pipeline repairs, reconstruction, operation and maintenance. The line, which is rusted and pitted and delivers poor quality water, was put back into service in Spring 1983.

In September 1983, EPA allocated $750,000 for a temporary water supply to the Cannongate Condominium Complex and for corrective actions at the landfill site. The construction work, under the immediate removal provisions of CERCLA, is expected to take about three months, October through December, with operation and maintenance continuing through March 1984. It will consist of providing storage capacity for two days' water supply, bulk water trucked to Cannongate as necessary, and a freeze-resistant pipe-withina-pipe system with direct connection to North Chelmsford. The landfill will receive a temporary cover will also be fenced.

A two-part focused feasibility study to evaluate alternative water supplies was conducted from July to October 1983. Part I which evaluated treatment options and alternative sources was prepared by NUS. Part II which evaluated existing municipal systems was prepared by Fay, Spofford and Thorndike of Lexington, Massachusetts. The studies were distributed to the Water Commissioner and Selectmen of Tyngsboro, Cannongate Condominium residents, State representatives, local officials, and other municipal water districts.

Public meetings were held on August 30, 1983, September 21, 1983, October 17, 1983 and October 31, 1983. The purpose of the first two meetings was to discuss the scope and findings of the studies, respectively. The purpose of the second two meetings was to receive input from the affected community. At all meetings, minutes were recorded and are available through the Regional Office for review.

A remedial investigation and feasibility study for site remediation was initiated in late September 1983. The workplan will address closure and post-closure care of the landfill; treatment and disposal of the landfill leachate; and surface and subsurface hydrogeology.

Feasibility Study Alternatives

The objective of the two-part Focused Feasibility Study was to recommend the most cost-effective method for providing an alternate water supply to the Cannongate Condominiums and surrounding residents whose wells have been or may become affected by leachate from the Charles George Land Reclamation Trust Landfill.

The "no-action" alternative is not feasible in this situation. The wells have been closed because of the presence of several known and potential carcinogens. The contaminants are increasing in magnitude as well as the number of contaminants present. Neighboring private wells are also beginning to show the presence of contaminants that were not detected a year earlier. Presently, water is being provided on a temporary basis by an above-ground emergency pipeline during warm weather and by water tanker trucks when water in the pipeline freezes. Therefore, a reliable new source of potable water is needed.

The remedial action alternatives considered in Part I by NUS include:

1. Uncontaminated well water supply from new groundwater wells.

2. Contaminated well water supply with treatment.

The development of new groundwater wells would require a hydrogeologic investigation at each proposed well site to characterize the aquifer(s) and determine the groundwater quality. The bedrock aquifer would have to be investigated to determine if there is sufficient yield or if the aquifer in these areas is contaminated. Several assumptions were made in order to develop a cost estimate for this alternative. The assumptions are discussed in more detail in the focused feasibility study and are as follows:

- The unconsolidated aquifer would be investigated and found to be unsuitable for a water supply because of contamination.

- The bedrock aquifer would be investigated and found to be suitable for a water supply.

- Three production wells would be set into the bedrock aquifer, each with an assumed production capacity of 50 gallons per minute. These three wells would serve as the water supply source.

The cost estimates for new groundwater wells include well exploration, testing and installation into the bedrock aquifer.

The treatment of contaminated well water supply would require a relatively complex treatment system. In considering this alternative, it was assumed that the two existing Cannongate Condominium wells, along with two of the exploratory wells recently drilled by the Field Investigation Team (FIT) and two nearby domestic wells, would supply the water for the system. Extensive treatability studies would be required to determine the most feasible treatment method. These studies must not only determine the feasibility of effectively treating the existing ground water, they must also address the ability to treat increased levels of contamination and also potential new contaminants that have not reached the wells to date. The cost estimate for treatment of the contaminated well water includes a water treatability study, but does not include costs for a pilot plant study which would be required to properly size the treatment system and to ensure its ability to effectively treat the water to potable standards.

Part II of the Feasibility Study conducted by Fay, Spofford, and Thorndike evaluated four specific domestic water supply systems to determine the feasibility of each system to supply the required capacity of water to the impacted area in Tyngsboro.

The water systems investigated include, the Town of Dunstable, the City of Lowell, the North Chelmsford Water District, and the Pennichuck Water Works in Nashua, New Hampshire. Each source was evaluated in terms of its ability to furnish water based upon:

- Present and future water requirements of the source;
- adequacy of distribution facilities of the source to support a pipeline extension;
- alternative pipeline length, size and routes;
- booster pumping requirements;
- construction costs;
- institutional issues.

The study concludes that Pennichuck and North Chelmsford are not viable alternatives because neither at present has a reliable water supply capacity to serve the needs of the project.

The study concludes that the Town of Dunstable's aquifer appears more than adequate to meet the demands of the Project Area's average daily requirements of 100,000 gpd with storage for fire protection. The primary institutional issue is the unwillingness of the Town to negotiate a long-term Water Purchase and Sales Agreement with the Tyngsboro Water District.

The study concludes that the Lowell system can adequately supply the domestic water requirements of the Project Area with storage for fire protection. This route is longer and more costly than the route from Dunstable and would require filings with various Commissions and agencies for stream, river, and railroad crossings. The City of Lowell has expressed a willingness to supply water to the Tyngsboro Water District (a letter dated June 23, 1983, from Mr. George P. Legrand, Jr., Commissioner of Public Works, Lowell, MA, is attached).

COSTS OF ALTERNATIVES

The following table is a summary of the capital, annual operation and maintenance(O&M), and present worth costs for each alternative. For Alternative 1, O&M would include maintenance of the well

house and water line, pump repair and replacement, water quality analysis, and energy costs. For Alternative 2, O&M costs would include the replacement of spent treatment materials, water quality analysis, maintenance of treatment equipment and the pump, and energy costs. For Alternative 3, O&M would include maintenance of the water line.

ALTERNATIVE	CAPITAL	ANNUAL O&M	PRESENT WORTH
1. Uncontaminated Water Supply	$1,789,000	$110,000	$2,725,500
2. Contaminated Well Water Supply	$2,042,000	$184,000	$3,609,000
3. Extension of domestic systems from:			
A. Dunstable	$1,430,000	$30,000	$1,690,000
B. N.Chelmsford Water District	$1,700,000	$41,000	$2,053,000
C. Pennichuck Water Works	$1,780,000	$30,000	$2,038,000
D. Lowell	$2,100,000	$41,000	$2,453,000

The most cost-effective solution for providing a permanent water supply is tying into an existing municipal water supply system. The reasons are as follows:

- Cost The present worth costs for extending an existing municipal water supply including fire protection from Dunstable and Lowell are $1,690,000 and $2,453,000 respectively. Both costs are less than either of the present worth costs for providing new wells ($2,725,000) or treatment of contaminated well water with fire protection ($3,609,000).

- Reliability A known quantity and quality of water would be available without having to treat contaminated ground water with potentially varying concentrations and types of contaminants to potable water standards.

- Operability and Maintainability An established water authority exists for coordinating the program and maintaining the water system. Any ground water treatment system would be complex and would require a highly skilled operator to to properly operate and maintain the system.

- Construction Schedule The design of the municipal extension can be initiated immediately. The other alternatives would require extensive field investigations and treatability studies first which will take several months to complete without any guarantee of success.

COMMUNITY INVOLVEMENT

The primary concern and request by the Cannongate people, which has been communicated and reiterated, in letter, by phone, and at all the public meetings, has been the provision of a permanent water supply. In general, they are willing to support and accept the most cost-effective solution identified by the focused feasibility studies. They have stated that if Dunstable refuses to sell water, they will urge EPA and DEQE to select Lowell.

LOCAL INVOLVEMENT

While the Tyngsboro Water Commissioners supported the selection of Dunstable for water supply, they have also taken initiative to have their consultant look more deeply at the Lowell route and its costs, with the conviction that a lower cost construction from Lowell could be achieved. The Tyngsboro Water Commissioners favor the selection of Lowell because of Lowell's offer to sell water for present needs and their willingness and ability to sell water for future needs of the Town.

Dunstable has a philosphy of planned growth at a moderate to slow rate and is concerned that the municipal water supply line to Cannongate in Tyngsboro would accelerate growth along the line in Dunstable. Secondly, Dunstable is concerned that the future demands of the town and the extended service area will exceed available supply. Finally, Dunstable has expressed the fear that any contract for the purchase and sale of water, once honored, could be subject to the pressure of greater demand on the part of Tyngsboro because of the spread of contaminants or because of development in Tyngsboro spurred by the presence of municipal water supply. The Dunstable Board of Selectmen declined a request by the Commonwealth of Massachusetts Department of Environmental Quality Engineering (DEQE) to extend a municipal water supply line to the Tynsboro Water District on December 12, 1983 and again on December 21, 1983. The DEQE lacks the authority to compel Dunstable to provide that service.

STATE INPUT

The Massachusetts DEQE has concurred with EPA that tying into an existing municipal water supply is the most reliable and cost-effective option for providing a permanent water supply. A letter confirming the State's recommendation is attached. The letter from the State also indicates that the State does not have the authority to order the Town of Dunstable to convey water to the area on a permanent basis.

ENFORCEMENT STATUS

In 1973, the Trust applied for and received a hazardous waste disposal permit from DEQE, Division of Water Pollution Control. The license was renewed for the years 1974 and 1975. During this time the landfill filed required paperwork with the Division listing classifications and quantities of wastes received at the Charles George Landfill.

Until 1976, the landfill operated on the western most 38 acres, when the Tyngsboro Board of Selectmen assigned the entire property located within town (Tyngsboro) boundaries as landfill. Town residents appealed the decision and asked the DEQE to revoke the landfill assignment on the eastern 25.3 acres, but DEQE ruled in favor of the Trust in April 1978.

In March 1978, the Trust and the Commonwealth of Massachusetts signed a Consent Agreement under which the Trust agreed to implement corrective measures for leachate control and to submit an approved engineering plan for operation of the landfill under Massachusetts Regulations for Sanitary Landfills.

Following inspections of the landfill conducted by DEQE on May 23, June 3, and June 16, 1980, the landfill was notified of numerous violations.

An Amended Agreement for Judgment between the Trust and the Commonwealth of Massachusetts was signed on December 17, 1981. This agreement included completion dates for construction of a leachate containment system and other remedial actions at the landfill site. The Amended Agreement also included provisions for additional hydrogeologic investigations on and in the vicinity of the landfill.

On March 29, 1982, the Tyngsboro Board of Health conducted a hearing under the provisions of Chapter II, Section 150A of the Massachusetts General Laws. The hearing was pursuant to a notice sent to the Charles George Land Reclamation Trust and was to determine whether a nuisance or danger to the public health existed at the assigned landfill facility in Tyngsboro. By a unanimous decision of the Board, the landfill's assignments were suspended, effective May 14, 1982. With this decision, the Board of Health issued an Order of Conditions. Until this Order was met, the landfill could not accept any wastes. However, the Massachusetts Superior Court issued an injunction against the Board of Health decision. The injunction allowed the landfill to operate while the Order of Conditions were met.

The Superior Court issued another Order in January 1983 which required additional hydrogeologic investigations at the site (the study specified in the December 1981 agreement) and ordered payment of funds to ensure a proper, final closure of the landfill.

Charles George Landfill was initially classified as a state lead enforcement case because of the states actions described above, until it became necessary to supply temporary water to Cannongate.

Superfund notice letters have been issued to the owners and operators, who have declined to undertake cleanup activities more extensive than those required by the various court orders. In April 1983, the Charles George Land Reclamation Trust filed for the protection of the bankruptcy court. Although the petition was ultimately dismissed, court records make it clear that the finances of the owners and operators will be inadequate to complete even the initial cleanup activities that are proposed.

A responsible party search for generators is in progress. Region I expects to commence negotiations for site cleanup and cost recovery for past actions during the 3rd quarter of FY-84.

RECOMMENDED ACTION

Section 300.68(j) of the National Contingency Plan (NCP) [47FR 31180, July 16, 1983] states that the appropriate extent of remedy shall be determined by the lead agency's selection of the remedial alternative which the agency determines is cost-effective (i.e., the lowest cost alternative that is technologically feasible and reliable) and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare, or the environment. Based on our evaluation of the cost-effectiveness of each of the proposed alternatives, the comments received from the public, the towns involved, Tyngsboro's consultant, and State information and support, we recommend that permanent water supply be provided for Cannongate by tying into an existing municipal water system.

PROPOSED ACTION

We request your approval of the remedial action. Our schedule calls for design to commence by the design firm selected by the Army Corps of Engineers immediately upon signing of the ROD and issuing the Interagency agreement. The design will take approximately three (3) months for completion. Construction will commence upon selection by the Corps of a construction firm. The following actions need to be completed to initiate construction activities:

1) Issue the Interagency Agreement to the Corp of Engineers.

2) Enter into a Superfund State Contract